

Sunnyvale, California

CONTAINS NO CBI

December 20, 1989

TSCA Document Processing Center (TS-790)  
Office of Toxic Substances  
U.S. Environmental Protection Agency  
Room L-100  
401 M Street S. W.  
Washington, D. C. 20460

Sirs:

This package contains the completed CAIR report forms for those chemicals on which Lockheed Missiles and Space Company (LMSC) is reporting, as listed in the Chemical Substance Matrix, section 704.225 of the December 22, 1988, Federal Register. Of the substances listed, the only ones which LMSC uses and which are not clearly exempted from reporting, are Toluene Diisocyanates (TDI).

The seven reports being filed are for the following chemicals:

Conathane DPEN-8536 (two reports filed for the two EPA facilities within LMSC)

We have been notified by the supplier via the June 14 Federal Register listing. We are using this product at two different EPA facilities of LMSC, as indicated in the reports.

Eccofoam FPH

We have not received a letter from the supplier, but have verbal information that he is preparing a written notification.

Scotch Cast Brand Resin 221

We received no letter from the supplier, who has indicated that they did not notify us since they are no longer producing this material, but would have if they were still manufacturing it.

Stafoam P1100 Series, Component T (three reports filed for the three different densities of this product).

We received no letter from the supplier since that company is exempt from reporting because of the size of their business and the volume of TDI that they manufacture.

We are reporting to you for all of these chemicals, because we consider the intent of the regulation makes it appropriate to report, even though in three of the four cases there may be a technicality which might be construed as reason not to report.

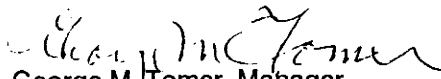
This report is provided within the timeframe requested in our letter dated September 28, 1989, and which was re-sent on November 20, 1989. On December 19, 1989, we received telephone confirmation that this request had been granted.

TSCA Document Processing Center (TS-790)  
Page 2  
December 20, 1989

If further information is needed, please call Barbara Jinbo [(408) 742-1193], who is the technical contact as listed on the report form.

Sincerely,

LOCKHEED MISSILES & SPACE COMPANY

  
George M. Tomer, Manager  
Occupational Safety and Health  
O/47-20, B/106  
1111 Lockheed Way  
Sunnyvale, CA 94089  
(408)743-2600

GMT:elm  
Enclosures

Scotch Gel Brn 1 Resin 221  
CONTAINS NO CBI



Form Approved  
OMB No. 2010-0019  
Approval Expires 12-31-89

EPA-OTS



000636199Y

90-9000000 31

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Comprehensive Assessment Information Rule  
REPORTING FORM

OTS DOCUMENT RECEIPT OFFICE  
89 DEC 27 AM 10:45

When completed, send this form to:

Document Processing Center  
Office of Toxic Substances, TS-790  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460  
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: \_\_\_\_\_

Document  
Control Number: \_\_\_\_\_

Docket Number: \_\_\_\_\_

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been completed in response to the Federal Register Notice of..... [1][2] [2][2] [8][8]  
CBI mo. day year

- ☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. .... [0][2][6][4][7][1]-[6][2]-[5]
- b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.
- (i) Chemical name as listed in the rule ..... NA
- (ii) Name of mixture as listed in the rule .... NA
- (iii) Trade name as listed in the rule ..... NA
- c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.
- Name of category as listed in the rule ..... NA
- CAS No. of chemical substance ..... NA [ ][ ][ ][ ][ ][ ]-[ ][ ]-[ ][ ]
- Name of chemical substance ..... NA

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

- CBI Manufacturer ..... 1
- ☐ Importer ..... 2
- Processor ..... 3
- X/P manufacturer reporting for customer who is a processor ..... 4
- X/P processor reporting for customer who is a processor ..... 5

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI  
☐ Yes ..... ☒ Go to question 1.04  
☐ No ..... ☐ Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI  
☐ Yes ..... 1  
☐ No ..... (2)

b. Check the appropriate box below: NA

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) .... NA

NA

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI  
☐ Trade name ..... NA  
☐ Is the trade name product a mixture? Circle the appropriate response. NA  
Yes ..... 1  
No ..... 2

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI  
☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

George M. Tomer  
NAME

George M. Tomer  
SIGNATURE

12/20/89  
DATE SIGNED

Manager, Occupational Safety  
TITLE and Health

( 408 ) 743-2600-  
TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

☐ Yes ..... ☒ Go to question 1.04

☐ No ..... ☐ Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

☐ Yes ..... 1

☐ No ..... 2

b. Check the appropriate box below: NA

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) .... NA

NA

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

☐ Trade name ..... NA

☐ Is the trade name product a mixture? Circle the appropriate response. NA

Yes ..... 1

No ..... 2

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

NAME

SIGNATURE

DATE SIGNED

TITLE

( )

TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

- 1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You CBI ☐ are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

NA \_\_\_\_\_  
NAME SIGNATURE DATE SIGNED  
\_\_\_\_\_  
TITLE ( ) TELEPHONE NO. DATE OF PREVIOUS SUBMISSION

- 1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI ☐ "My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause-substantial harm to my company's competitive position."

NA \_\_\_\_\_  
NAME SIGNATURE DATE SIGNED  
\_\_\_\_\_  
TITLE ( ) TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

## PART B CORPORATE DATA

CBI Name [L][O][C][K][H][E][E][D][\_][M][I][S][S][I][L][E][S][\_][E][\_][S][P][A][C][E]

[ ] Address [1][1][1][1][ ] L O C K H E E D [ ] W A Y [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
Street

SUNNYVALE                      City

State CA Zip 94089 -- 3504

Dun &amp; Bradstreet Number ..... [0][0] - [9][1][2] - [5][5][3][5]

EPA ID Number ..... C.A.D. [0][0][9][1][2][5][5][3][5]

Employer ID Number ..... UK ..... ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

Primary Standard Industrial Classification (SIC) Code .....[3][7][6][1]

Other SIC Code .....[ ][ ][ ][ ]

Other SIC Code .....[ ][ ][ ][ ]

CBI Name [L][O][C][K][H][E][E][D][ ][M][I][S][S][I][L][E][S][ ][E][ ][S][P][A][C][E][ ]

[illegible]

(S)(U)(N)(N)(Y)(U)(A)(L)(E) City

CA 94089--3504  
State Zip

Dun & Bradstreet Number ..... [0][0]-[9][1][2]-[5][5][3][5]

Employer ID Number .....( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

☐ Mark (X) this box if you attach a continuation sheet.



### 1.11 Parent Company Identification

CBI Name [L][O][C][K][H][E][E][D] [C][O][R][P][O][R][A][T][I][O][N] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

[ ] Address [4][5][0][0] [P][A][R][K] [G][R][A][N][A][D][A] [B][L][U][D] [ ] [ ]  
Street

Street

C A L A B A S A S

City

$$[\overline{C}][\overline{A}] \quad [\overline{9}][\overline{1}][\overline{3}][\overline{9}][\overline{9}] \text{--} [\overline{0}][\overline{3}][\overline{3}][\overline{0}]$$

State

Zip

Dun &amp; Bradstreet Number .....[0][0]-[8][2][5]-[5][2][8][3]

## 1.12 Technical Contact

CBI Name [B][A][R][B][A][R][A] [J][I][N][B][O]

Title [S][U][P][E][R][V][I][S][O][R]-[S][A][F][E][T][Y]-[C][H][E][A][L][T][H]

Address [1][1][1][1] [L][O][C][K][H][E][E][D] [W][A][Y]

Street

[5] U M N Y V A L E [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

City

$$[\overline{C}][\overline{A}] \quad [\overline{9}][\overline{4}][\overline{0}][\overline{8}][\overline{9}] \text{--} [\overline{3}][\overline{5}][\overline{0}][\overline{4}]$$

State

Zip

Telephone Number .....[4][0][8]-[7][4][2]-[1][1][9][3]

1.13 This reporting year is from ..... 01 88 to 12 88  
Mo. Year Mo. Year

Mo.

Year

Mo.

Year

☐ Mark (X) this box if you attach a continuation sheet.

NA

[illegible][illegible]

[ ] [ ]      [ ] [ ] [ ] [ ] [ ] -- [ ] [ ] [ ] [ ]

Zip

Date of Sale .....[ ] [ ] [ ] [ ]

Year

Telephone Number .....[ ][ ]-[ ][ ]-[ ][ ]

NA

[illegible][illegible]

                                                                    --                                    

Zip

Date of Purchase .....[ ] [ ] [ ] [ ] [ ] [ ]

Year

Telephone Number .....( ) ( ) ( ) -( ) ( ) ( ) -( ) ( ) ( ) ( )

[ ]

1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI

<u>Classification</u>	<u>Quantity (kg/yr)</u>
Manufactured .....	<u>NA</u>
Imported .....	<u>NA</u>
Processed (include quantity repackaged) .....	<u>10.6</u>
Of that quantity manufactured or imported, report that quantity:	
In storage at the beginning of the reporting year .....	<u>NA</u>
For on-site use or processing .....	<u>NA</u>
For direct commercial distribution (including export) .....	<u>NA</u>
In storage at the end of the reporting year .....	<u>NA</u>
Of that quantity processed, report that quantity:	
In storage at the beginning of the reporting year .....	<u>10.6</u>
Processed as a reactant (chemical producer) .....	<u>NA</u>
Processed as a formulation component (mixture producer) .....	<u>NA</u>
Processed as an article component (article producer) .....	<u>NA</u>
Repackaged (including export) .....	<u>NA</u>
In storage at the end of the reporting year .....	<u>0</u>

$$\left( \begin{array}{l} 60 \text{ kits Scotch Cast} \\ \text{Brand Resin 221} \\ \text{used in 1998} \end{array} \right) (0.39 \text{ lbs/kil}) (0.4536) = 10.6 \text{ kg/yr}$$

☐ Mark (X) this box if you attach a continuation sheet.

PART C IDENTIFICATION OF MIXTURES

1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

CBI

☐

Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% $\pm$ 0.5%)
Toluene diisocyanate	3M Company	23 $\pm$ UK
Toluene-diisocyanate-based prepolymer (polyurethane)	3M Company	77 $\pm$ UK
		Total 100%

☐ Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

☐ Year ending ..... 12 87  
Mo. Year

Quantity manufactured ..... NA kg

Quantity imported ..... NA kg

Quantity processed ..... 10.6 kg

Year ending ..... 12 86  
Mo. Year

Quantity manufactured ..... NA kg

Quantity imported ..... NA kg

Quantity processed ..... 10.6 kg

Year ending ..... 12 85  
Mo. Year

Quantity manufactured ..... NA kg

Quantity imported ..... NA kg

Quantity processed ..... 10.6 kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

☐ NA  
Continuous process ..... 1

Semicontinuous process ..... 2

Batch process ..... 3

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all appropriate process types.

☐

Continuous process ..... 1

Semicontinuous process ..... 2

Batch process ..... 3

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this question.)

CBI

☐

Manufacturing capacity ..... NA kg/yr

Processing capacity ..... NA kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production volume.

CBI

☐

	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	<u>NA</u>	<u>NA</u>	<u>UK</u>
Amount of decrease	<u>NA</u>	<u>NA</u>	<u>UK</u>

☐ Mark (X) this box if you attach a continuation sheet.

- 2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

Days/Year      Average  
Hours/Day

Process Type #1 (The process type involving the largest quantity of the listed substance.)

Manufactured .....	<u>NA</u>	<u>NA</u>
Processed .....	<u>60</u>	<u>8</u>

Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)

Manufactured .....	<u>NA</u>	<u>NA</u>
Processed .....	<u>NA</u>	<u>NA</u>

Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)

Manufactured .....	<u>NA</u>	<u>NA</u>
Processed .....	<u>NA</u>	<u>NA</u>

- 2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

*Response not required for TDI*

Maximum daily inventory .....	_____	kg
Average monthly inventory .....	_____	kg

☐ Mark (X) this box if you attach a continuation sheet.

2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct or Impurity<sup>1</sup></u>	<u>Concentration (%) (specify ± % precision)</u>	<u>Source of By-products, Coproducts, or Impurities</u>
<u>UK</u>	<u>UK</u>	<u>UK</u>	<u>UK</u>	<u>UK</u>

<sup>1</sup>Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct  
C = Coproduct  
I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.



- 2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	100%	100%	H

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) <u>Government/Military</u>

☐ Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	100%	100%	H

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) <u>Government/Military</u>

☐ Mark (X) this box if you attach a continuation sheet.

2.14

CBI

☐

Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

a.	b.	c.	d.
Product Type <sup>1</sup>	Final Product's Physical Form <sup>2</sup>	Average % Composition of Listed Substance in Final Product	Type of End-Users <sup>3</sup>
NA	NA	NA	NA

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the final product's physical form:

A = Gas	F2 = Crystalline solid
B = Liquid	F3 = Granules
C = Aqueous solution	F4 = Other solid
D = Paste	G = Gel
E = Slurry	H = Other (specify) _____
F1 = Powder	

<sup>3</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the listed substance to off-site customers. NA

CBI

☐ Truck ..... 1

Railcar ..... 2

Barge, Vessel ..... 3

Pipeline ..... 4

Plane ..... 5

Other (specify) \_\_\_\_\_ 6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers or prepared by your customers during the reporting year for use under each category of end use listed (i-iv).

☐

Category of End Use

i. Industrial Products

Chemical or mixture ..... NA kg/yr

Article ..... NA kg/yr

ii. Commercial Products

Chemical or mixture ..... NA kg/yr

Article ..... NA kg/yr

iii. Consumer Products

Chemical or mixture ..... NA kg/yr

Article ..... NA kg/yr

iv. Other

Distribution (excluding export) ..... NA kg/yr

Export ..... NA kg/yr

Quantity of substance consumed as reactant ..... NA kg/yr

Unknown customer uses ..... NA kg/yr

☐ Mark (X) this box if you attach a continuation sheet.

# SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

## PART A GENERAL DATA

- 3.01** Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.  
**CBI** The average price is the market value of the product that was traded for the listed substance.

☐

<u>Source of Supply</u>	<u>Quantity (kg)</u>	<u>Average Price (\$/kg)</u>
The listed substance was manufactured on-site.	<u>NA</u>	<u>NA</u>
The listed substance was transferred from a different company site.	<u>NA</u>	<u>NA</u>
The listed substance was purchased directly from a manufacturer or importer.	<u>10.6</u>	<u>84.85</u>
The listed substance was purchased from a distributor or repackager.	<u>NA</u>	<u>NA</u>
The listed substance was purchased from a mixture producer.	<u>NA</u>	<u>NA</u>

- 3.02** Circle all applicable modes of transportation used to deliver the listed substance to your facility.

**CBI**

☐

- Truck ..... ①  
 Railcar ..... 2  
 Barge, Vessel ..... 3  
 Pipeline ..... 4  
 Plane ..... 5  
 Other (specify) \_\_\_\_\_ 6

☐ Mark (X) this box if you attach a continuation sheet.

3.03

CBI

- a. Circle all applicable containers used to transport the listed substance to your facility.

☐

Bags ..... 1  
Boxes ..... 2  
Free standing tank cylinders ..... 3  
Tank rail cars ..... 4  
Hopper cars ..... 5  
Tank trucks ..... 6  
Hopper trucks ..... 7  
Drums ..... 8  
Pipeline ..... 9  
Other (specify) Metal Containers..... (10)

- b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders ..... NA mmHg  
Tank rail cars ..... NA mmHg  
Tank trucks ..... NA mmHg

☐ Mark (X) this box if you attach a continuation sheet.

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

CBI

☐

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify <math>\pm</math> % precision)</u>	<u>Amount Processed (kg/yr)</u>
Scotch Cast Brand Resin 221	3M Co.	23 $\pm$ UK	10.6

☐ Mark (X) this box if you attach a continuation sheet.

---

PART C RAW MATERIAL VOLUME

---

3.05 State the quantity of the listed substance used as a raw material during the reporting year in the form of a class I chemical, class II chemical, or polymer, and the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify $\pm$ % precision)
Class I chemical	10.6	23 $\pm$ UK
Class II chemical	NA	NA
Polymer	NA	NA

---

☐ Mark (X) this box if you attach a continuation sheet.

---



## SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

### General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

### PART A PHYSICAL/CHEMICAL DATA SUMMARY

- 4.01** Specify the percent purity for the three major<sup>1</sup> technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI

☐

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	<u>NA</u> % purity	<u>NA</u> % purity	<u>UK</u> % purity
Technical grade #2	<u>NA</u> % purity	<u>NA</u> % purity	<u>UK</u> % purity
Technical grade #3	<u>NA</u> % purity	<u>NA</u> % purity	<u>UK</u> % purity

<sup>1</sup>Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02** Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes ..... **(1)**

No ..... 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company ..... 1

Another source ..... **(2)**

☐ Mark (X) this box if you attach a continuation sheet.

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes ..... 1

No ..... 2

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

[ ]

Activity	Physical State				
	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	3	4	5
Store	1	2	3	4	5
Dispose	1	2	3	4	5
Transport	1	2	3	4	5

[ ] Mark (X) this box if you attach a continuation sheet.

4.05

Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles  $\geq 10$  microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

CBI

☐

Physical  
State

NA

Manufacture   Import   Process   Store   Dispose   Transport

Dust

<1 micron

1 to <5 microns

5 to <10 microns

Powder

<1 micron

1 to <5 microns

5 to <10 microns

Fiber

<1 micron

1 to <5 microns

5 to <10 microns

Aerosol

<1 micron

1 to <5 microns

5 to <10 microns

☐ Mark (X) this box if you attach a continuation sheet.

---

SECTION 5 ENVIRONMENTAL FATE

---

PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

---

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) .... UK (1/M cm) at UK nm  
Reaction quantum yield,  $\phi$  ..... UK at UK nm  
Direct photolysis rate constant,  $k_p$ , at ... UK 1/hr UK latitude

b. Oxidation constants at 25°C:

For  $^1O_2$  (singlet oxygen),  $k_{ox}$  ..... UK 1/M hr  
For  $RO_2$  (peroxy radical),  $k_{ox}$  ..... UK 1/M hr

c. Five-day biochemical oxygen demand,  $BOD_5$  ... UK mg/l

d. Biotransformation rate constant:

For bacterial transformation in water,  $k_b$  ... UK 1/hr  
Specify culture ..... NA

e. Hydrolysis rate constants:

For base-promoted process,  $k_b$  ..... UK 1/M hr  
For acid-promoted process,  $k_a$  ..... UK 1/M hr  
For neutral process,  $k_n$  ..... UK 1/hr

f. Chemical reduction rate (specify conditions) UK

g. Other (such as spontaneous degradation) ... UK

---

☐ Mark (X) this box if you attach a continuation sheet.

---

PART B PARTITION COEFFICIENTS

- 5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	<u>UK</u>
Atmosphere	<u>UK</u>
Surface water	<u>UK</u>
Soil	<u>UK</u>

- b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>	<u>Media</u>
<u>UK</u>	<u>UK</u>	<u>UK</u>	in <u>NA</u>
			in
			in
			in

- 5.03 Specify the octanol-water partition coefficient,  $K_{ow}$  ... UK at 25°C  
Method of calculation or determination ..... NA

- 5.04 Specify the soil-water partition coefficient,  $K_d$  ..... UK at 25°C  
Soil type ..... NA

- 5.05 Specify the organic carbon-water partition coefficient,  $K_{oc}$  ..... UK at 25°C

- 5.06 Specify the Henry's Law Constant,  $H$  ..... UK atm-m<sup>3</sup>/mole

☐ Mark (X) this box if you attach a continuation sheet.

- 5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

Bioconcentration Factor

Species

Test<sup>1</sup>

UK

UK

UK

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

<sup>1</sup>Use the following codes to designate the type of test:

F = Flowthrough

S = Static

☐ Mark (X) this box if you attach a continuation sheet.

6.04 For each market listed below, state the quantity sold and the total sales value of the listed substance sold or transferred in bulk during the reporting year.

☐

*Response not required for TDI*

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales	_____	_____
Distribution -- Wholesalers	_____	_____
Distribution -- Retailers	_____	_____
Intra-company transfer	_____	_____
Repackagers	_____	_____
Mixture producers	_____	_____
Article producers	_____	_____
Other chemical manufacturers or processors	_____	_____
Exporters	_____	_____
Other (specify)	_____	_____
_____	_____	_____

6.05

Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use in your current operation, and which results in a final product with comparable performance in its end uses.

CBI

☐

<u>Substitute</u>	<u>Cost (\$/kg)</u>
<i>UK</i>	<i>NA</i>
_____	_____
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

# SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

## General Instructions:

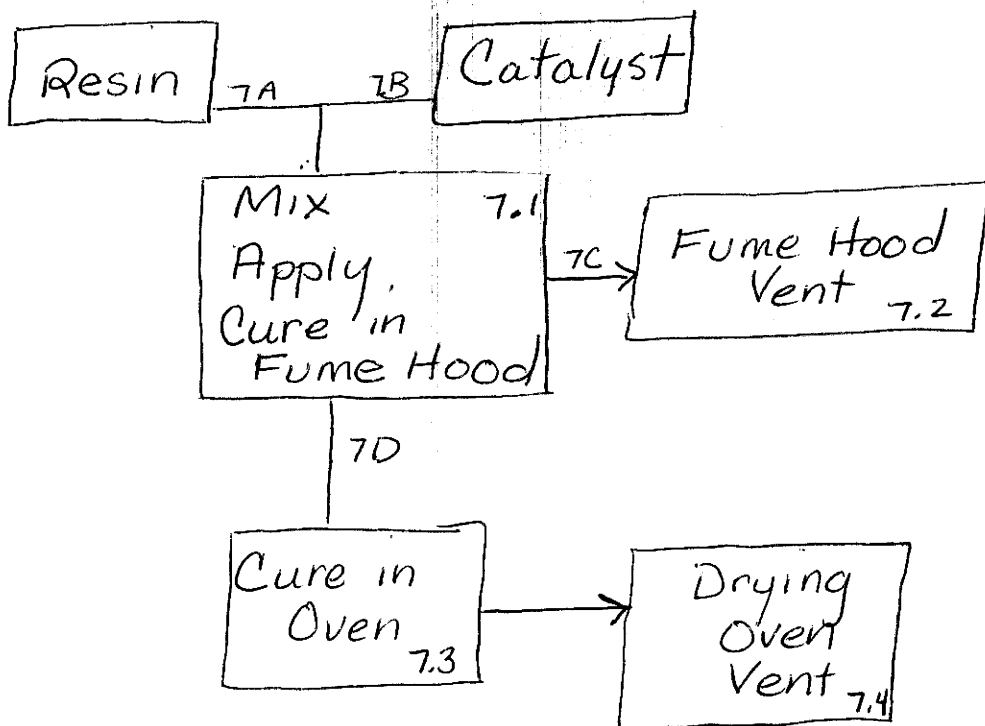
For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

## PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

☐ Process type ..... Conformal Coating



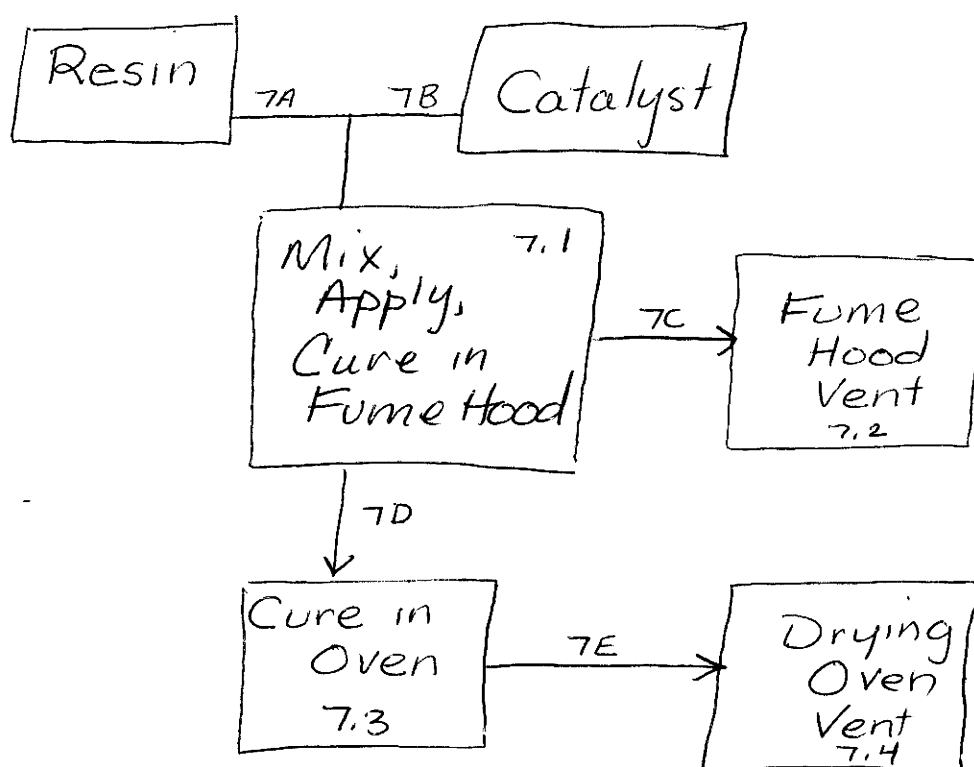
☐ Mark (X) this box if you attach a continuation sheet.



- 7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

☐ Process type ..... Conformal Coating



Possible Emissions  
of TDI  
7.2  
7.4

☐ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

[ ] Process type ..... Conformal Coating

☐ Mark (X) this box if you attach a continuation sheet.

- 7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Conformal Coating

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
<u>7A</u>	<u>Base Resin</u>	<u>OL</u>	<u>10.6</u>
<u>7B</u>	<u>Catalyst</u>	<u>OL</u>	<u>16.3</u>
<u>7C</u>	<u>Emission to fume hood vent</u>	<u>GU</u>	<u>UK</u>
<u>7D</u>	<u>Coating - Polyurethane</u>	<u>SO</u>	<u>UK</u>
<u>7E</u>	<u>Emission to oven vent</u>	<u>GU</u>	<u>UK</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

**7.06** Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Conformal Coating

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds <sup>1</sup>	Concentrations <sup>2,3</sup> (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7A</u>	<u>TDI-based prepolymer</u>	<u>77</u>	<u>NA</u>	<u>NA</u>
	<u>TDI</u>	<u>23</u>	<u>NA</u>	<u>NA</u>
<u>7B</u>	<u>Phenyl mercuric hydroxide</u>	<u>&lt;1</u>	<u>NA</u>	<u>NA</u>
	<u>Polyol</u>	<u>&gt;99</u>	<u>NA</u>	<u>NA</u>
<u>7D</u>	<u>Polyurethane</u>	<u>100</u>	<u>NA</u>	<u>NA</u>
<u>7C, 7E</u>	<u>UK</u>	<u>UK</u>	<u>UK</u>	<u>UK</u>

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

<sup>1</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	NA	NA
2		
3		
4		
5		

<sup>2</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result  
E = Engineering judgement/calculation

<sup>3</sup>Use the following codes to designate how the concentration was measured:

V = Volume  
W = Weight

☐ Mark (X) this box if you attach a continuation sheet.

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SECTION 8 RESIDUAL TREATMENT GENERATION, CHARACTERIZATION, TRANSPORTATION, AND  
MANAGEMENT

---

General Instructions:

For questions 8.04-8.06, provide a separate response for each residual treatment block flow diagram provided in question 8.01, 8.02 or 8.03. Identify the process type from which the information is extracted.

For questions 8.05-8.33, the Stream Identification Codes are those process streams listed in either the Section 7 or Section 8 block flow diagrams which contain residuals for each applicable waste management method.

For questions 8.07-8.33, if residuals are combined before they are handled, list those Stream Identification Codes on the same line.

Questions 8.09-8.33 refer to the waste management activities involving the residuals identified in either the Section 7 or Section 8 block flow diagrams. Not all Stream Identification Codes used in the sample answers (e.g., for the incinerator questions) have corresponding process streams identified in the block flow diagram(s). These Stream Identification codes are for illustrative purposes only.

For questions 8.11-8.33, if you have provided the information requested on one of the EPA Office of Solid Waste surveys listed below within the three years prior to your reporting year, you may submit a copy or reasonable facsimile in lieu of answering those questions which the survey addresses. The applicable surveys are: (1) Hazardous Waste Treatment, Storage, Disposal, and Recycling Survey; (2) Hazardous Waste Generator Survey; or (3) Subtitle D Industrial Facility Mail Survey.

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☐ Mark (X) this box if you attach a continuation sheet.

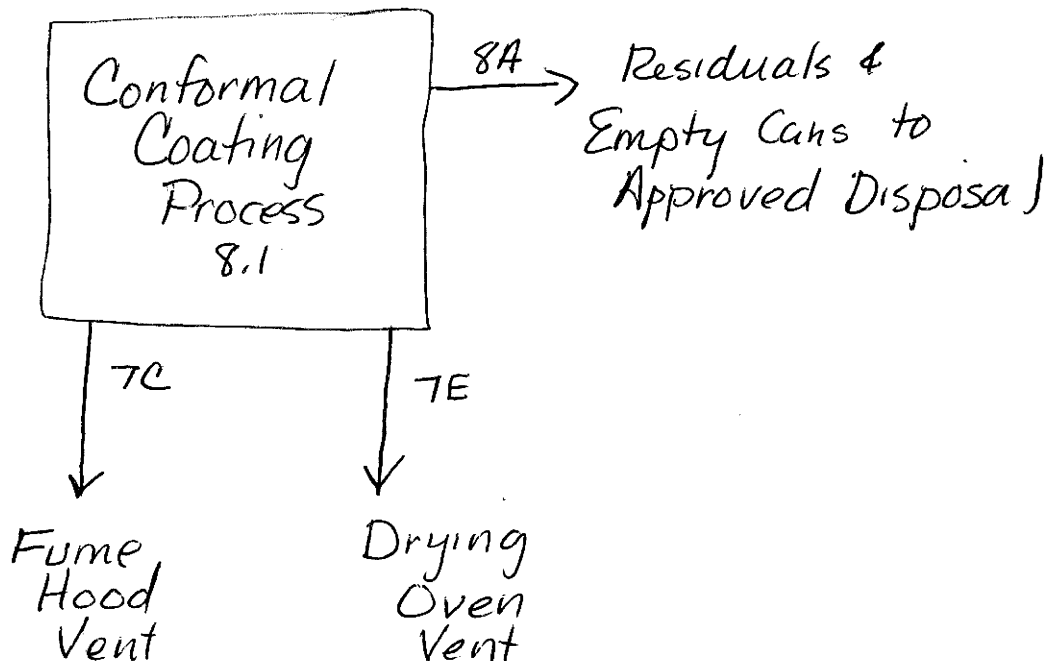
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PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

☐ Process type ..... Conformal Coating



☐ Mark (X) this box if you attach a continuation sheet.

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

☐ Process type ..... Conformal Coating

[illegible]

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.



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8.05 (continued)

<sup>1</sup>Use the following codes to designate the type of hazardous waste:

I = Ignitable  
C = Corrosive  
R = Reactive  
E = EP toxic  
T = Toxic  
H = Acutely hazardous

<sup>2</sup>Use the following codes to designate the physical state of the residual:

GC = Gas (condensable at ambient temperature and pressure)  
GU = Gas (uncondensable at ambient temperature and pressure)  
SO = Solid  
SY = Sludge or slurry  
AL = Aqueous liquid  
OL = Organic liquid  
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

---

8.05 continued below

---

☐ Mark (X) this box if you attach a continuation sheet.

---

8.05 (continued)

<sup>3</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	NA	NA
2		
3		
4		
5		

<sup>4</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result

E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

<sup>5</sup>Use the following codes to designate how the concentration was measured:

V = Volume

W = Weight

<sup>6</sup>Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

<u>Code</u>	<u>Method</u>	<u>Detection Limit</u> <u>(± ug/l)</u>
<u>1</u>	<u>NA</u>	<u>NA</u>
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		

☐ Mark (X) this box if you attach a continuation sheet.

8.06

Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐

Process type .....

Conformal Coating

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code	Management Method Code <sup>2</sup>	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes in Management Methods
On-Site	Off-Site						
<u>8A</u>	<u>A08, A09</u>	<u>3I</u>	<u>UK</u>	<u>0</u>	<u>100</u>	<u>UK</u>	<u>NA</u>
<u>7C, 7E</u>	<u>B91</u>	<u>M5(a)</u>	<u>UK</u>	<u>100</u>	<u>0</u>	<u>NA</u>	<u>NA</u>

<sup>1</sup>Use the codes provided in Exhibit 8-1 to designate the waste descriptions

<sup>2</sup>Use the codes provided in Exhibit 8-2 to designate the management methods

☐

Mark (X) this box if you attach a continuation sheet.

**EXHIBIT 8-1.**  
(Refers to question 8.06(b))

**WASTE DESCRIPTION CODES**

These waste description codes were developed specifically for this survey to supplement the descriptions listed with the RCRA and other waste codes. (These waste description codes are not regulatory definitions.)

**WASTE DESCRIPTION CODES FOR HAZARDOUS WASTE DESCRIBED BY A SINGLE RCRA F, K, P, OR U WASTE CODE**

A01 Spent solvent (F001-F005, K086)	A06 Contaminated soil or cleanup residue	A10 Incinerator ash
A02 Other organic liquid (F001-F005, K086)	A07 Other F or K waste, exactly as described*	A11 Solidified treatment residue
A03 Still bottom (F001-F005, K086)	A08 Concentrated off-spec or discarded product	A12 Other treatment residue (specify in "Facility Notes")
A04 Other organic sludge (F001-F005, K086)	A09 Empty containers	A13 Other untreated waste (specify in "Facility Notes")
A05 Wastewater or aqueous mixture		

\*"Exactly as described" means that the waste matches the description of the RCRA waste code.

**INORGANIC LIQUIDS**—Waste that is primarily inorganic and highly fluid (e.g., aqueous), with low suspended inorganic solids and low organic content.

- B01 Aqueous waste with low solvents
- B02 Aqueous waste with low other toxic organics
- B03 Spent acid with metals
- B04 Spent acid without metals
- B05 Acidic aqueous waste
- B06 Caustic solution with metals but no cyanides
- B07 Caustic solution with metals and cyanides
- B08 Caustic solution with cyanides but no metals
- B09 Spent caustic
- B10 Caustic aqueous waste
- B11 Aqueous waste with reactive sulfides
- B12 Aqueous waste with other reactives (e.g., explosives)
- B13 Other aqueous waste with high dissolved solids
- B14 Other aqueous waste with low dissolved solids
- B15 Scrubber water
- B16 Leachate
- B17 Waste liquid mercury
- B18 Other inorganic liquid (specify in "Facility Notes")

**INORGANIC SLUDGES**—Waste that is primarily inorganic, with moderate-to-high water content and low organic content; pumpable.

- B19 Lime sludge without metals
- B20 Lime sludge with metals/metal hydroxide sludge
- B21 Wastewater treatment sludge with toxic organics
- B22 Other wastewater treatment sludge
- B23 Untreated plating sludge without cyanides
- B24 Untreated plating sludge with cyanides
- B25 Other sludge with cyanides
- B26 Sludge with reactive sulfides
- B27 Sludge with other reactives
- B28 Degreasing sludge with metal scale or filings
- B29 Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
- B30 Sediment or lagoon dragout contaminated with organics
- B31 Sediment or lagoon dragout contaminated with inorganics only

- B32 Drilling mud
- B33 Asbestos slurry or sludge
- B34 Chloride or other brine sludge
- B35 Other inorganic sludge (specify in "Facility Notes")

**INORGANIC SOLIDS**—Waste that is primarily inorganic and solid, with low organic content and low-to-moderate water content; not pumpable.

- B36 Soil contaminated with organics
- B37 Soil contaminated with inorganics only
- B38 Ash, slag, or other residue from incineration of wastes
- B39 Other "dry" ash, slag, or thermal residue
- B40 "Dry" lime or metal hydroxide solids chemically "fixed"
- B41 "Dry" lime or metal hydroxide solids not "fixed"
- B42 Metal scale, filings, or scrap
- B43 Empty or crushed metal drums or containers
- B44 Batteries or battery parts, casings, cores
- B45 Spent solid filters or adsorbents
- B46 Asbestos solids and debris
- B47 Metal-cyanide salts/chemicals
- B48 Reactive cyanide salts/chemicals
- B49 Reactive sulfide salts/chemicals
- B50 Other reactive salts/chemicals
- B51 Other metal salts/chemicals
- B52 Other waste inorganic chemicals
- B53 Lab packs of old chemicals only
- B54 Lab packs of debris only
- B55 Mixed lab packs
- B56 Other inorganic solids (specify in "Facility Notes")

**INORGANIC GASES**—Waste that is primarily inorganic with a low organic content and is a gas at atmospheric pressure.

- B57 Inorganic gases

**ORGANIC LIQUIDS**—Waste that is primarily organic and is highly fluid, with low inorganic solids content and low-to-moderate water content.

- B58 Concentrated solvent-water solution
- B59 Halogenated (e.g., chlorinated) solvent
- B60 Nonhalogenated solvent

- B61 Halogenated/nonhalogenated solvent mixture
- B62 Oil-water emulsion or mixture
- B63 Waste oil
- B64 Concentrated aqueous solution of other organics
- B65 Concentrated phenolics
- B66 Organic paint, ink, lacquer, or varnish
- B67 Adhesives or epoxies
- B68 Paint thinner or petroleum distillates
- B69 Reactive or polymerizable organic liquid
- B70 Other organic liquid (specify in "Facility Notes")

**ORGANIC SLUDGES**—Waste that is primarily organic, with low-to-moderate inorganic solids content and water content; pumpable.

- B71 Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
- B72 Still bottoms of nonhalogenated solvents or other organic liquids
- B73 Oily sludge
- B74 Organic paint or ink sludge
- B75 Reactive or polymerizable organics
- B76 Resins, tars, or tarry sludge
- B77 Biological treatment sludge
- B78 Sewage or other untreated biological sludge
- B79 Other organic sludge (specify in "Facility Notes")

**ORGANIC SOLIDS**—Waste that is primarily organic and solid, with low-to-moderate inorganic content and water content; not pumpable.

- B80 Halogenated pesticide solid
- B81 Nonhalogenated pesticide solid
- B82 Solid resins or polymerized organics
- B83 Spent carbon
- B84 Reactive organic solid
- B85 Empty fiber or plastic containers
- B86 Lab packs of old chemicals only
- B87 Lab packs of debris only
- B88 Mixed lab packs
- B89 Other halogenated organic solid
- B90 Other nonhalogenated organic solid

**ORGANIC GASES**—Waste that is primarily organic with low-to-moderate inorganic content and is a gas at atmospheric pressure.

- B91 Organic gases

EXHIBIT 8-2.  
(Refers to question 8.06(c))

MANAGEMENT METHODS

- M1 = Discharge to publicly owned wastewater treatment works  
M2 = Discharge to surface water under NPDES  
M3 = Discharge to off-site, privately owned wastewater treatment works  
M4 = Scrubber: a) caustic; b) water; c) other  
M5 = Vent to: a) atmosphere; b) flare; c) other (specify) \_\_\_\_\_  
M6 = Other (specify) \_\_\_\_\_

TREATMENT AND RECYCLING

Incineration/thermal treatment

- 1I Liquid injection  
2I Rotary or rocking kiln  
3I Rotary kiln with a liquid injection unit  
4I Two stage  
5I Fixed hearth  
6I Multiple hearth  
7I Fluidized bed  
8I Infrared  
9I Fume/vapor  
10I Pyrolytic destructor  
11I Other incineration/thermal treatment

Reuse as fuel

- 1RF Cement kiln  
2RF Aggregate kiln  
3RF Asphalt kiln  
4RF Other kiln  
5RF Blast furnace  
6RF Sulfur recovery furnace  
7RF Smelting, melting, or refining furnace  
8RF Coke oven  
9RF Other industrial furnace  
10RF Industrial boiler  
11RF Utility boiler  
12RF Process heater  
13RF Other reuse as fuel unit

Fuel Blending

- 1FB Fuel blending

Solidification

- 1S Cement or cement/silicate processes  
2S Pozzolan processes  
3S Asphaltic processes  
4S Thermoplastic techniques  
5S Organic polymer techniques  
6S Jacketing (macro-encapsulation)  
7S Other solidification

Recovery of solvents and liquid organics for reuse

- 1SR Fractionation  
2SR Batch still distillation  
3SR Solvent extraction  
4SR Thin-film evaporation  
5SR Filtration  
6SR Phase separation  
7SR Dessication  
8SR Other solvent recovery

Recovery of metals

- 1MR Activated carbon (for metals recovery)  
2MR Electrodialysis (for metals recovery)  
3MR Electrolytic metal recovery  
4MR Ion exchange (for metals recovery)  
5MR Reverse osmosis (for metals recovery)  
6MR Solvent extraction (for metals recovery)  
7MR Ultrafiltration (for metals recovery)  
8MR Other metals recovery

Wastewater Treatment

After each wastewater treatment type listed below (1WT - 66WT) specify a) tank; or b) surface impoundment (i.e., 63WTA)

Equalization

- 1WT Equalization

Cyanide oxidation

- 2WT Alkaline chlorination  
3WT Ozone  
4WT Electrochemical  
5WT Other cyanide oxidation

General oxidation (including disinfection)

- 6WT Chlorination  
7WT Ozonation  
8WT UV radiation  
9WT Other general oxidation

Chemical precipitation<sup>1</sup>

- 10WT Lime  
11WT Sodium hydroxide  
12WT Soda ash  
13WT Sulfide  
14WT Other chemical precipitation

Chromium reduction

- 15WT Sodium bisulfite  
16WT Sulfur dioxide

EXHIBIT 8-2. (continued)

MANAGEMENT METHODS

17WT Ferrous sulfate  
18WT Other chromium reduction

Complexed metals treatment (other than  
chemical precipitation by pH adjustment)  
19WT Complexed metals treatment

Emulsion breaking  
20WT Thermal  
21WT Chemical  
22WT Other emulsion breaking

Adsorption  
23WT Carbon adsorption  
24WT Ion exchange  
25WT Resin adsorption  
26WT Other adsorption

Stripping  
27WT Air stripping  
28WT Steam stripping  
29WT Other stripping

Evaporation  
30WT Thermal  
31WT Solar  
32WT Vapor recompression  
33WT Other evaporation

Filtration  
34WT Diatomaceous earth  
35WT Sand  
36WT Multimedia  
37WT Other filtration

Sludge dewatering  
38WT Gravity thickening  
39WT Vacuum filtration  
40WT Pressure filtration (belt, plate  
and frame, or leaf)  
41WT Centrifuge  
42WT Other sludge dewatering

Air flotation  
43WT Dissolved air flotation  
44WT Partial aeration  
45WT Air dispersion  
46WT Other air flotation

Oil skimming  
47WT Gravity separation

48WT Coalescing plate separation  
49WT Other oil skimming

Other liquid phase separation  
50WT Decanting  
51WT Other liquid phase separation

Biological treatment  
52WT Activated sludge  
53WT Fixed film-trickling filter  
54WT Fixed film-rotating contactor  
55WT Lagoon or basin, aerated  
56WT Lagoon, facultative  
57WT Anaerobic  
58WT Other biological treatment

Other wastewater treatment  
59WT Wet air oxidation  
60WT Neutralization  
61WT Nitrification  
62WT Denitrification  
63WT Flocculation and/or coagulation  
64WT Settling (clarification)  
65WT Reverse osmosis  
66WT Other wastewater treatment

OTHER WASTE TREATMENT

1TR Other treatment  
2TR Other recovery for reuse

ACCUMULATION

1A Containers  
2A Tanks

STORAGE

1ST Container (i.e., barrel, drum)  
2ST Tank  
3ST Waste pile  
4ST Surface impoundment  
5ST Other storage

DISPOSAL

1D Landfill  
2D Land treatment  
3D Surface impoundment (to be closed  
as a landfill)  
4D Underground injection well

<sup>1</sup>Chemical precipitation is a treatment operation whereby the pH of a waste is adjusted to the range necessary for removal (precipitation) of contaminants. However, if the pH is adjusted solely to achieve a neutral pH, THE OPERATION SHOULD BE CONSIDERED NEUTRALIZATION (60WT).

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

☐

*Response not required for TDI*

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1

No ..... 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

☐

*NA*

Incinerator	Air Pollution Control Device <sup>1</sup>	Types of Emissions Data Available
1		
2		
3		

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1

No ..... 2

<sup>1</sup>Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)

E = Electrostatic precipitator

O = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.



---

SECTION 9 WORKER EXPOSURE

---

General Instructions:

Questions 9.03-9.25 apply only to those processes and workers involved in manufacturing or processing the listed substance. Do not include workers involved in residual waste treatment unless they are involved in this treatment process on a regular basis (i.e., exclude maintenance workers, construction workers, etc.).

---

☐ Mark (X) this box if you attach a continuation sheet.

---

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI

☐

Data Element	Data are Maintained for:		Year in Which Data Collection Began	Number of Years Records Are Maintained
	Hourly Workers	Salaried Workers		
Date of hire	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Age at hire	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Work history of individual before employment at your facility	<u>NA</u>	<u>NA</u>	<u>NA</u>	
Sex	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Race	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Job titles	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Start date for each job title	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
End date for each job title	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Work area industrial hygiene monitoring data	<u>X</u>	<u>X</u>	<u>1957</u>	<u>37</u>
Personal employee monitoring data	<u>X</u>	<u>X</u>	<u>1957</u>	<u>37</u>
Employee medical history	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Employee smoking history	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Accident history	<u>X</u>	<u>X</u>	<u>1957</u>	<u>37</u>
Retirement date	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Termination date	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>
Vital status of retirees	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Cause of death data	<u>X</u>	<u>X</u>	<u>1954</u>	<u>37</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.02

In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

☐

a.	b.	c.	d.	e.
<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
Manufacture of the listed substance	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA
On-site use as reactant	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	10.6	14	6720
On-site use as nonreactant	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA
On-site preparation of products	Enclosed	NA	NA	NA
	Controlled Release	NA	NA	NA
	Open	NA	NA	NA

60 days/yr.  $\times$  8 hrs/day  $\times$  14 workers =  
6720 worker-hours

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A

*Electronic Technician*

B

C

D

E

F

G

H

I

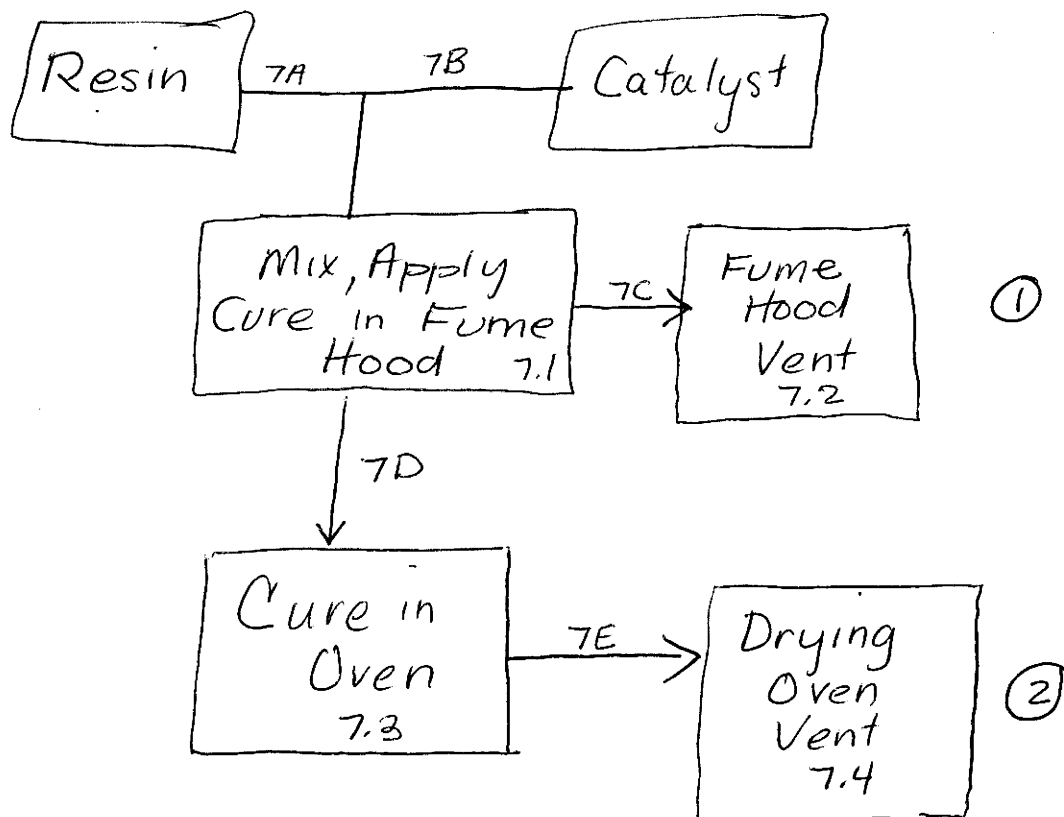
J

☐ Mark (X) this box if you attach a continuation sheet.

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type ..... Conformal Coating



☐ Mark (X) this box if you attach a continuation sheet.

- 9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐

Process type .....

Conformal Coating

Work Area ID

Description of Work Areas and Worker Activities

1

Fume Hood (workers mix material & apply to electrical components; air cure in hood)

2

Drying Oven Area (workers place electrical components in oven for curing).

3

4

5

6

7

8

9

10

☐

Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Conformal Coating

Work area ..... 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
<u>A</u>	<u>14</u>	<u>Inhalation/skin</u>	<u>OL/GU</u>	<u>E</u>	<u>60</u>

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)	SY = Sludge or slurry
GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)	AL = Aqueous liquid
SO = Solid	OL = Organic liquid
	IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less	D = Greater than 2 hours, but not exceeding 4 hours
B = Greater than 15 minutes, but not exceeding 1 hour	E = Greater than 4 hours, but not exceeding 8 hours
C = Greater than one hour, but not exceeding 2 hours	F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06

Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type .....

Conformal Coating

Work area .....

2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
<u>A</u>	<u>14</u>	<u>Inhalation</u>	<u>GU</u>	<u>B</u>	<u>60</u>

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☐

Mark (X) this box if you attach a continuation sheet.



9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Conformal Coating  
Work area ..... 1, 2

Labor Category	8-hour TWA Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)
<u>A</u>	<u>UK</u>	<u>UK</u>

☐ Mark (X) this box if you attach a continuation sheet.

PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

*Do not monitor*

☐

Sample/Test	Work Area ID	Testing Frequency (per year)	Number of Samples (per test)	Who Samples <sup>1</sup>	Analyzed In-House (Y/N)	Number of Years Records Maintained
Personal breathing zone	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
General work area (air)						
Wipe samples						
Adhesive patches						
Blood samples						
Urine samples						
Respiratory samples						
Allergy tests						
Other (specify)						
Other (specify)						
Other (specify)						

<sup>1</sup>Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist

B = Insurance carrier

C = OSHA consultant

D = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

**9.09** For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

☐ Sample Type Sampling and Analytical Methodology

<u>NA</u>	<u>NA</u>

**9.10** If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

CBI

<input type="checkbox"/> <u>Equipment Type</u> <sup>1</sup>	<u>Detection Limit</u> <sup>2</sup>	<u>Manufacturer</u>	<u>Averaging Time (hr)</u>	<u>Model Number</u>
<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

<sup>1</sup>Use the following codes to designate personal air monitoring equipment types:

- A = Passive dosimeter
- B = Detector tube
- C = Charcoal filtration tube with pump
- D = Other (specify) \_\_\_\_\_

Use the following codes to designate ambient air monitoring equipment types:

- E = Stationary monitors located within work area
- F = Stationary monitors located within facility
- G = Stationary monitors located at plant boundary
- H = Mobile monitoring equipment (specify) \_\_\_\_\_
- I = Other (specify) \_\_\_\_\_

<sup>2</sup>Use the following codes to designate detection limit units:

- A = ppm
- B = Fibers/cubic centimeter (f/cc)
- C = Micrograms/cubic meter (µ/m<sup>3</sup>)

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

☐

Test Description

Frequency  
(weekly, monthly, yearly, etc.)

NA

NA

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

- 9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Conformal Coating  
 Work area ..... 1

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	_____	_____	_____	_____
General dilution	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
Vessel emission controls	_____	_____	_____	_____
Mechanical loading or packaging equipment	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
<u>Fume Hood</u>	<u>Y</u>	<u>UK</u>	<u>NA</u>	<u>NA</u>

The coating is mixed, applied to an electrical component, and air cured in a fume hood.

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

- 9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Conformal Coating

Work area ..... 2

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	_____	_____	_____	_____
General dilution	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
_____	_____	_____	_____	_____
Vessel emission controls	_____	_____	_____	_____
Mechanical loading or packaging equipment	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
<u>Oven is vented</u>	<u>Y</u>	<u>UK</u>	<u>NA</u>	<u>NA</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... NA

Work area ..... NA

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
<u>NA</u>	<u>NA</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... NA

Work area ..... NA

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
<u>NA</u>	<u>NA</u>

☐ Mark (X) this box if you attach a continuation sheet.



PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Conformal Coating  
Work area ..... 1, 2

Equipment Types	Wear or Use (Y/N)
Respirators	<u>N</u>
Safety goggles/glasses	<u>N</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>Y</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
_____	<u>NA</u>
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

- 9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... NA

Work Area	Respirator Type	Average Usage <sup>1</sup>	Fit Tested (Y/N)	Type of Fit Test <sup>2</sup>	Frequency of Fit Tests (per year)
<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

<sup>1</sup>Use the following codes to designate average usage:

A = Daily  
 B = Weekly  
 C = Monthly  
 D = Once a year  
 E = Other (specify) \_\_\_\_\_

<sup>2</sup>Use the following codes to designate the type of fit test:

QL = Qualitative  
 QT = Quantitative

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type ..... Conformal Coating

Work area ..... 1, 2

Workers are trained in general lab procedures and in the specialty process of applying conformal coatings to electrical components.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Conformal Coating

Work area ..... 1, 2

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____

Other (specify)

General Lab

House Keeping - Lab operations are not continuous; housekeeping duties are performed as necessary.

☐ Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure *Response not required for TDI*

Yes ..... 1

No ..... 2

Emergency exposure

Yes ..... 1

No ..... 2

If yes, where are copies of the plan maintained?

Routine exposure: \_\_\_\_\_

Emergency exposure: \_\_\_\_\_

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes ..... 1

No ..... 2

If yes, where are copies of the plan maintained? *NA*

Has this plan been coordinated with state or local government response organizations? Circle the appropriate response. *NA*

Yes ..... 1

No ..... 2

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

*Response not required for TDI*

Plant safety specialist ..... 1

Insurance carrier ..... 2

OSHA consultant ..... 3

Other (specify) \_\_\_\_\_ 4

☐ Mark (X) this box if you attach a continuation sheet.

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## SECTION 10 ENVIRONMENTAL RELEASE

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### General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

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### PART A GENERAL INFORMATION

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**10.01** Where is your facility located? Circle all appropriate responses.

CBI

- |                          |   |          |
|--------------------------|---|----------|
| <input type="checkbox"/> | Industrial area .....   | <b>1</b> |
|                          | Urban area .....  | 2        |
|                          | Residential area .....  | 3        |
|                          | Agricultural area .....   | 4        |
|                          | Rural area .....  | 5        |
|                          | Adjacent to a park or a recreational area .....                                 | 6        |
|                          | Within 1 mile of a navigable waterway .....                                     | 7        |
|                          | Within 1 mile of a school, university, hospital, or nursing home facility ..... | 8        |
|                          | Within 1 mile of a non-navigable waterway .....                                 | 9        |
|                          | Other (specify) _____ .....   | 10       |

---

☐ Mark (X) this box if you attach a continuation sheet.

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- 10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude ..... 37 ° 25N, 20 "

Longitude ..... 122 ° 2W, 00 "

UTM coordinates ..... Zone NA, Northing NA, Easting NA

- 10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information. *Response not required for TDI*

Average annual precipitation ..... inches/year

Predominant wind direction .....

- 10.04 Indicate the depth to groundwater below your facility. *Response not required for TDI*

Depth to groundwater ..... meters

- 10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of Y, N, and NA.)

CBI

☐

On-Site Activity

Environmental Release

Manufacturing

Air

Water

Land

NA

NA

NA

Importing

NA

NA

NA

Processing

Y

N

N

Otherwise used

NA

NA

NA

Product or residual storage

N

N

N

Disposal

N

N

N

Transport

NA

NA

NA

☐ Mark (X) this box if you attach a continuation sheet.

10.06

80/20 TDI Mixture Only

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

☐

Quantity discharged to the air ..... UK kg/yr  $\pm$  NA %

Quantity discharged in wastewaters ..... UK kg/yr  $\pm$  NA %

Quantity managed as other waste in on-site treatment, storage, or disposal units ..... UK kg/yr  $\pm$  NA %

Quantity managed as other waste in off-site treatment, storage, or disposal units ..... UK kg/yr  $\pm$  NA %

☐ Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type .....

NA

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
NA	NA	NA

☐

Mark (X) this box if you attach a continuation sheet.



PART B RELEASE TO AIR

- 10.09** Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type ..... Conformal Coating

Point Source  
ID Code

Description of Emission Point Source

7C

Fume Hood Vent Emission

7E

Oven Vent Emission

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

**10.10** Emission Characteristics -- Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

Point Source ID Code	Physical State <sup>1</sup>	Average Emissions (kg/day)	Frequency <sup>2</sup> (days/yr)	Duration <sup>3</sup> (min/day)	Average Emission Factor <sup>4</sup>	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
7C	✓	UK	60	420	UK	UK	UK	UK
7D	✓	UK	60	60	UK	UK	UK	UK

<sup>1</sup>Use the following codes to designate physical state at the point of release:

G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) \_\_\_\_\_

<sup>2</sup>Frequency of emission at any level of emission

<sup>3</sup>Duration of emission at any level of emission

<sup>4</sup>Average Emission Factor — Provide estimated ( $\pm 25$  percent) emission factor (kg of emission per kg of production of listed substance)

**10.11** Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m) <sup>1</sup>	Building Width(m) <sup>2</sup>	Vent, Type <sup>3</sup>
7C	UK	UK	UK	UK	12.2	173	✓
7D	UK	UK	UK	UK	12.5	173	✓

<sup>1</sup>Height of attached or adjacent building

<sup>2</sup>Width of attached or adjacent building

<sup>3</sup>Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09. Photocopy this question and complete it separately for each emission point source.

CBI

☐

Point source ID code ..... NA

Size Range (microns)

Mass Fraction (% ± % precision)

< 1  
≥ 1 to < 10  
≥ 10 to < 30  
≥ 30 to < 50  
≥ 50 to < 100  
≥ 100 to < 500  
≥ 500

NA  
NA  
NA  
NA  
NA  
NA  
NA

Total = 100%

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

- 10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐

Process type .....

NA

Percentage of time per year that the listed substance is exposed to this process type ..... %

NA

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals <sup>1</sup>						
Packed						
Mechanical						
Double mechanical <sup>2</sup>						
Compressor seals <sup>1</sup>						
Flanges						
Valves						
Gas <sup>3</sup>						
Liquid						
Pressure relief devices <sup>4</sup> (Gas or vapor only)						
Sample connections						
Gas						
Liquid						
Open-ended lines <sup>5</sup> (e.g., purge, vent)						
Gas						
Liquid						

<sup>1</sup>List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐

Mark (X) this box if you attach a continuation sheet.

## 10.13 (continued)

<sup>2</sup> If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

<sup>3</sup>Conditions existing in the valve during normal operation

<sup>4</sup>Report all pressure relief devices in service, including those equipped with control devices

<sup>5</sup>Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

**CBI**

[ ]

[illegible]

<sup>1</sup> Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

<sup>2</sup>The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

☐ Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

*No formal leak detection program*

☐

Process type ..... *NA*

Equipment Type	Leak Detection	Detection Device <sup>1</sup>	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
	Concentration (ppm or mg/m <sup>3</sup> ) Measured at _____ Inches from Source				
<i>NA</i>					
Pump seals					
Packed					
Mechanical					
Double mechanical					
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

<sup>1</sup> Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) \_\_\_\_\_

☐

Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

- 10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Vessel Type <sup>1</sup>	Floating Roof Seals <sup>2</sup>	Composition of Stored Materials <sup>3</sup>	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Operating Vessel Volume (l)	Vessel Emission Controls <sup>4</sup>	Design Flow Rate <sup>5</sup>	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate <sup>6</sup>
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

<sup>1</sup>Use the following codes to designate vessel type:

F = Fixed roof  
 CIF = Contact internal floating roof  
 NCIF = Noncontact internal floating roof  
 EFR = External floating roof  
 P = Pressure vessel (indicate pressure rating)  
 H = Horizontal  
 U = Underground

<sup>2</sup>Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary  
 MS2 = Shoe-mounted secondary  
 MS2R = Rim-mounted, secondary  
 LM1 = Liquid-mounted resilient filled seal, primary  
 LM2 = Rim-mounted shield  
 LMW = Weather shield  
 VM1 = Vapor mounted resilient filled seal, primary  
 VM2 = Rim-mounted secondary  
 VMW = Weather shield

<sup>3</sup>Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

<sup>4</sup>Other than floating roofs

<sup>5</sup>Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

<sup>6</sup>Use the following codes to designate basis for estimate of control efficiency:

C = Calculations  
 S = Sampling



PART E NON-ROUTINE RELEASES

- 10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

Release	Date Started	Time (am/pm)	Date Stopped	Time (am/pm)
1	NA	NA	NA	NA
2				
3				
4				
5				
6				

- 10.24 Specify the weather conditions at the time of each release.

*Response not required for TDI*

Release	Wind Speed (km/hr)	Wind Direction	Humidity (%)	Temperature (°C)	Precipitation (Y/N)
1					
2					
3					
4					
5					
6					

☐ Mark (X) this box if you attach a continuation sheet.

CR-632

P.O. # QZQ1U5290

XMETQ2000

ZAD410480

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

40-436

## SECTION I

MANUFACTURER'S NAME <b>3M COMPANY</b>		EMERGENCY TELEPHONE NO. <b>(612) 733-1110</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>3M CENTER, ST. PAUL, MINNESOTA 55101</b>		<b>59020</b>
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS <b>SCOTCHCAST Brand Resin #221</b>
CHEMICAL FAMILY <b>Polyurethane</b>	FORMULA	

007706

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
PART A: Polyurethane containing [free toluene diisocyanate]*				100	0.02 ppm
PART B: Phenyl mercuric hydroxide				<1	0.05 mg/m <sup>3</sup>
* concentration equals 22.7% of part A. Info per 1 clean.					
3/30/84, 3M Product Information Dept. A/C					

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.06
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	nil
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ -1)	Nil
SOLUBILITY IN WATER	Part A reacts		
APPEARANCE AND ODOR	Viscous liquids		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	>300°F	FLAMMABLE LIMITS	LeI	Uel
EXTINGUISHING MEDIA	CO <sub>2</sub> , foam, dry chemicals			
SPECIAL FIRE FIGHTING PROCEDURES				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II

EFFECTS OF OVEREXPOSURE

Part B may irritate eyes and skin. Part A may irritate eyes, skin and respiratory system. Inhalation of vapors may cause sensitization of respiratory system in susceptible individuals.

EMERGENCY AND FIRST AID PROCEDURES

EYE contact: Flush immediately with plenty of water. Seek medical advice. SKIN contact: Wash with soap and water. INHALATION: Provide fresh air. Contact physician if severe.

## SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

Moisture

INCOMPATIBILITY (Materials to avoid)

Part A reacts with water, alcohols and amines.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

A: Wear organic vapor mask. Neutralize with isopropyl alcohol or 1% ammonia in water. If not available, water alone may be used with longer neutralization time required. Pour absorbing material over spill. Collect into a drum. Clean up residue.

B, B/A: Collect spilled material. Clean up residue.

WASTE DISPOSAL METHOD: A: Incinerate properly. Do not landfill.

B: Contains heavy metals. Incinerate properly. B/A: Sanitary landfill

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Respirator equipped with organic vapor cartridge.

VENTILATION

LOCAL EXHAUST

X

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

X

EYE PROTECTION

X

OTHER PROTECTIVE EQUIPMENT

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Do not get in eyes, on skin or clothes. Do not breathe vapors. Use only with adequate ventilation. Launder contaminated clothing before re-use. Keep container closed. Store at 70°F in dry place.

OTHER PRECAUTIONS

# PRODUCT INFORMATION

## POLYURETHANE LIQUID, 2 PART UNFILLED, FLEXIBLE LIQUID RESIN

40-436

**Scotchcast**

RESIN

221

SCOTCHCAST Brand Resin 221 is distinguished by its good moisture resistance, electrical properties and low exotherm. In addition, 221 resin offers low mixing viscosity, good thermal shock, low stress at low temperatures and a tough abrasion resistant transparent coating which can be repaired.

221 resin should be considered for electronic and

electrical potting and encapsulating, especially in solid state modules where delicate low strain and heat sensitive components and circuitry are involved. It is also useful as a conformal coating and can be applied by brush, dip and spray. This resin is a good abrasion and moisture resistant overcoat for electrical equipment.

### MIXING

(See important handling precautions on back page)

Thorough and complete mixing is most important. Mix Part A and B in the proper ratio by weight to within 2% accuracy. The unfilled resin 221 should be mixed until all cloudiness disappears and it is crystal clear in appearance.

### MIXING RATIO

By Weight	By Volume
A - 5	A - 33%
B - 8	B - 67%

### DEAERATING

Deaeration of resin is important to remove air bubbles introduced during mixing. Evacuate resin at room temperature to between 5 and 10 mm of mercury absolute pressure. Allow the froth to rise and collapse after which vacuum should be continued for only another minute or so. **EVACUATED VAPORS MUST BE EXHAUSTED TO THE OUTSIDE. IMPORTANT NOTE:** Do not warm material prior to evacuating, and do not pull a vacuum of less than 5 mm of mercury because component vapors in the resin may be drawn off which may adversely affect the cure and final properties.

### PIGMENTING

Use pigments specifically designed for use in polyurethane resin systems available from several manufacturers. Pigments must always be added to the Part B of the resin and should be kept at a minimum. For best results, the pigmented Part B should be evacuated before combining with Part A. When adding pigments or fillers, check for compatibility as well as effect on cure before using.

### PRIMERS

Where adhesion is critical, the surface must be primed. For plastic or rubber type substrates, use "Scotchcast" Brand XR-5136 as the primer. For metal surfaces, use XR-5137 for priming. Instruction sheets on how to use these primers are available upon request.

### CURING GUIDE

Demold	Full Cure
10 hrs. @ 23°C (73°F)	3 days @ 23°C (73°F)
1 hr. @ 67°C (152°F)	6 to 8 hrs. @ 67°C (152°F)
	4 to 5 hrs. @ 105°C (221°F)
	2 to 3 hrs. @ 130°C (266°F)

# TYPICAL PROPERTIES\*

Property	Value
Initial Viscosity (Mixed)	900 cps
Specific Gravity	1.06
Tensile Strength <sup>1</sup>	225 PSI (1.55 MPa)
Elongation <sup>1</sup>	65%
Thermal Shock <sup>3</sup> 10 cycles 130°C to -55°C	No cracking
Mechanical Shock <sup>2</sup> wt. (lbs.) of ball causing fracture	>7.8 lb. ball (3.54 Kg)
Hardness	57 Shore A
Heat Stability <sup>2</sup> 1 week of 130°C	0.25% wt. loss hardness 57 to 55 Shore A
Abrasion resistance <sup>4</sup>	0.15 grams removed
Thermal Conductivity <sup>5</sup> Cal/sec/cm <sup>2</sup> /°C/cm	$4.2 \times 10^{-4}$
Coefficient of linear thermal expansion <sup>2</sup> length/unit length/°C	$21.1 \times 10^{-5}$
Electrical strength <sup>2</sup> .125" (3.175mm) sample	340 VPM (13.6 kv/mm)
Exothermic Rise over ambient temp 500 gram sample	22°C
Moisture Absorption <sup>2</sup> (% weight gain)	0.65
Brittle Point <sup>3</sup>	-60°C

\* Values are averages based on several determinations and are not intended for specification purposes.

<sup>1</sup> ASTM-D638

<sup>2</sup> MIL-1-16923E

<sup>3</sup> 3M test method available upon request

<sup>4</sup> Taber abrasion, 1000 gm. wt., H22 wheel, 1000 cycles

<sup>5</sup> CENO-FITCH

# "SCOTCHCAST" BRAND RESIN 221

40-436

## HANDLING PROPERTIES

Mixing Ratio		Initial Viscosity
BY WEIGHT	BY VOLUME	(Mixed)
(within 2% accuracy)	33% A 67% B	900 cps
A - 5		
B - 8		

**STORAGE** containers must be kept tightly sealed before and after use to prevent entry of moisture. Exposure may cause bubbling or foaming in the cured resin. Prolonged or continuous exposure to humidity can render the material unusable.

**MIXING** - thorough and complete mixing is most important. Mix the part B of filled systems before removing them from their containers. For best results when adding pigments or stirring up filled systems, the part B should be evacuated before mixing with part A. Mix part A and B in the proper ratio by weight to within 2% accuracy. The unfilled resin 221 should be mixed until all cloudiness disappears and it is crystal clear in appearance.

**DEAERATING** - Deareration of resin is important to remove air bubbles introduced during mixing. Evacuate resin at room temperature to between 5 and 10 mm. of mercury absolute pressure. Allow the froth to rise and collapse after which vacuum should be continued for only another minute or so.

## Handling Precautions

Avoid breathing vapors. Use only in well ventilated areas, preferably with unidirectional air flow away from operators. Avoid contact of these materials with the skin and eyes. The use of adequate protective clothing and safety glasses is recommended. If contact does occur, wash the skin thoroughly with

Since the manufacturer of the product described in this technical data sheet has no means of controlling the final use of the product by the consumer or user, it is the responsibility of the immediate purchaser and any intermediate seller or sellers to inform the user of the purposes for which the product may be fit and suitable and of the properties of the product, including the precautionary measures which must be taken in order to insure the safety of the user and of other third persons and property.

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, express or implied:

Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the products. Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith. No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

## CURING GUIDE

Demold	Full Cure	
10 hours @ 23°C	3 days @ 23°C	(73°F)
1 hour @ 67°C	6 to 8 hrs. @ 67°C	(152°F)
	4 to 5 hrs. @ 105°C	(221°F)
	2 to 3 hrs. @ 130°C	(266°F)

**IMPORTANT NOTE:** Do not warm material prior to evacuating or pull a vacuum of less than 5 mm. of mercury as component vapors in the resin may be drawn off which may adversely affect the cure and final properties.

**PIGMENTING** - Use pigments specifically designed for use in polyurethane resin systems available from several manufacturers. Pigments must always be added to the part B of the resin and should be kept at a minimum. For best results, the pigmented part B should be evacuated before combining with part A. When adding pigments or fillers, check for compatibility and effect on cure before using.

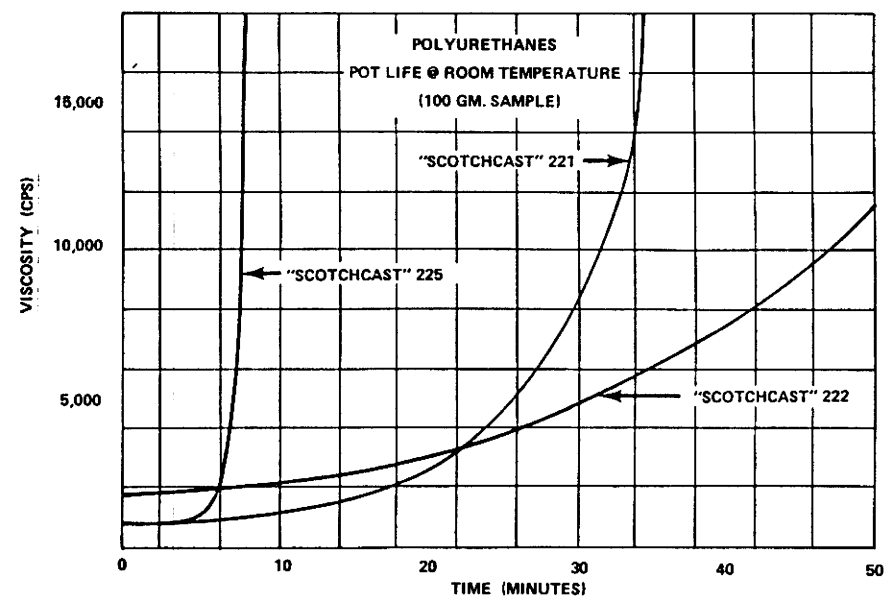
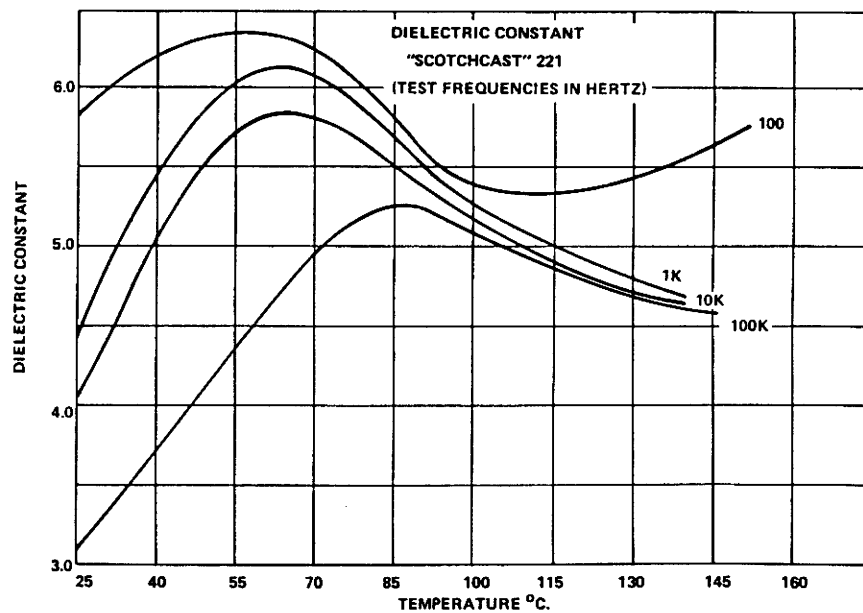
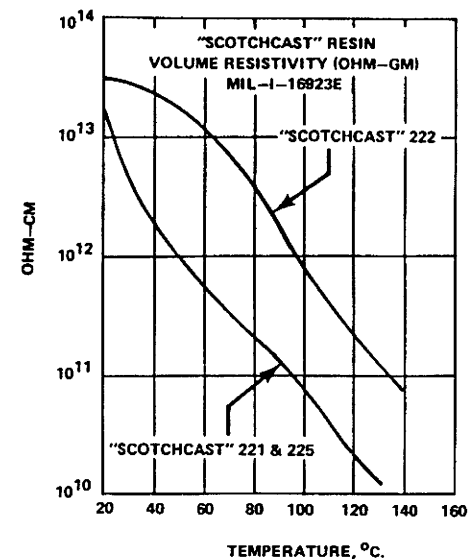
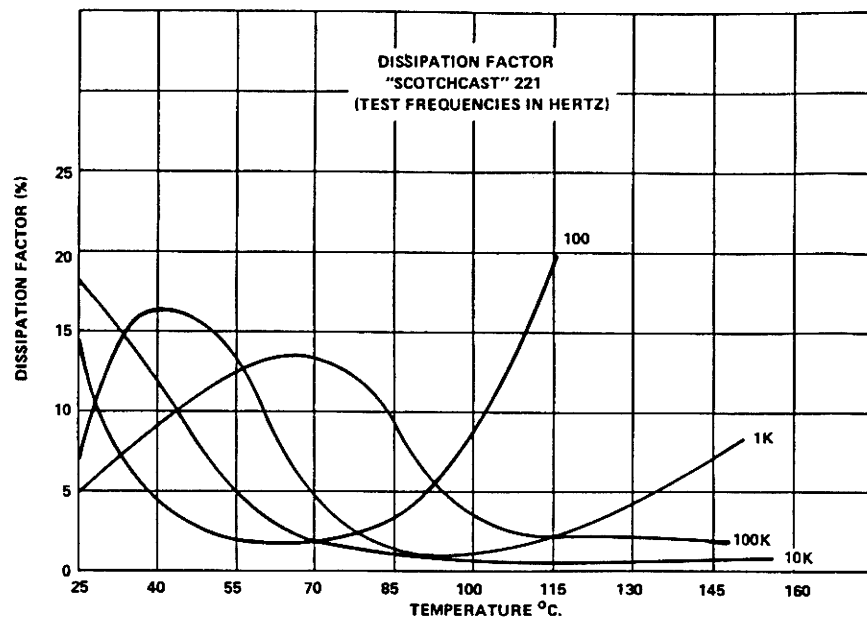
**PRIMERS** - where adhesion is critical, the surface must be primed. For plastic or rubber type substrates use "SCOTCHCAST" Brand XR-5136 as the primer. For metal surfaces, use XR-5137 for priming. Instruction sheets on how to use these primers are available upon request.

soap and water. In case of eye contact, flush copiously with clean cold water and obtain medical attention. Should resin contact clothing, change immediately. Accidental spills in the work area should be wiped up right away. Clean tools after use with toluene or acetone.

**Dielectric Materials & Systems Division**

**3M**  
COMPANY

3M CENTER • SAINT PAUL, MINNESOTA 55101



## STORAGE

Containers must be stored in a cool dry place and must be kept tightly sealed before and after use to prevent entry of moisture. Exposure may cause bubbling or foaming in the cured resin. Prolonged or continuous exposure to humidity can render the material unusable.

## HANDLING PRECAUTIONS

**WARNING:** Hazardous vapor and liquid [contains toluene diisocyanate (TDI)]. Before handling, please consult an industrial hygienist, safety engineer, or other person responsible for plant safety. Avoid breathing vapors. Use only in areas sufficiently ventilated to maintain TDI concentrations below the threshold limit value. Mixing and pouring of resins should be conducted only in a ventilated hood or while wearing a full face respirator equipped with an organic vapor canister. Avoid contact of these materials with the skin, eyes, and clothing. The use of adequate protective clothing and safety glasses is recommended. If contact does occur, wash the skin thoroughly with soap and water. In case of eye contact, flush copiously with clean water and obtain medical attention. For respiratory difficulty, obtain medical attention. Should resin contact clothing, change immediately. Accidental spills in the work area should be wiped up right away. Clean tools with toluene or acetone, observing proper precautions for these solvents. Keep out of the reach of children.

### IMPORTANT NOTICE TO PURCHASER

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, express or implied:

Seller's and manufacturer's only obligation shall be to replace the quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his intended use, and user assumes all risk and liability whatsoever in connection therewith.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by officers of seller and manufacturer.

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